

## **REMARKS**

### **Allowable Claims**

Claims 28, 29, 47 and 48 have been objected to, but have been indicated as allowable if rewritten in independent form. To that end, dependent claim 28 has been rewritten in independent form and allowance of the same is respectfully requested. Additionally, claim 29 depends from rewritten independent claim 28 and is submitted to be in condition for allowance.

### **Claim Rejections – 35 USC §102 and §103**

Claims 27, 38-40, 44-46, 49 and 50 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,325,550 to Reuther (hereinafter “the ‘550 patent”). Claims 19-25, 30, 31 and 34-37 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,435,723 to O’Brien (hereinafter “the ‘723 patent”) in view of U.S. Patent No. 5,282,861 to Kaplan (hereinafter “the ‘861 patent”). Claims 32 and 33 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,979,828 to Taylor (hereinafter “the ‘828 patent”) or alternatively as being obvious over the ‘828 patent in view of U.S. Patent No. 4,186,486 to Gordon (hereinafter “the ‘486 patent”). Claims 41-43 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the ‘550 patent in view of the ‘861 patent.

### **Rejection of Claims 27, 38-40, 44-46, 49 and 50 as Being Anticipated**

Claims 27, 38-40, 44-46, 49 and 50 have been rejected under 35 U.S.C. 102(b) as being anticipated by the ‘550 patent. It is well established that “an invention is anticipated if the same device, including all the claim limitations, is shown in a single prior art reference. Every element of the claimed invention must be literally present, arranged as in the claim.” Richardson v. Suzuki Motor Co. Ltd., 9 USPQ.2d 1913, 1920 (Fed. Cir. 1989).

The ‘550 patent is directed to a dental implant for implantation in the jaw bone. As an initial matter, the Applicant submits that a dental implant is not analogous art with regard to fusion devices for facilitating arthrodesis in the disc spacer between adjacent vertebrae. Additionally, the ‘550 patent discloses an implant anchoring device including a body 1, a bed 2

for attachment to the body 1, and an implant support structure 3 configured for attachment to a superstructure (e.g., a tooth). The body defines a number of support ribs 4 and three notches or cutting flutes 5 which define cutting edges 6. In the Office Action, the notches 5 have been referred to as “a pair of oppositely disposed truncated side walls” which in turn “define a pair of threaded arcuate side walls”. The Applicant respectfully disagrees with this characterization. Even assuming arguendo that the notches 5 could be construed as “truncated side walls”, the notches 5 are clearly not “oppositely disposed”, but are instead arranged in a triangular relationship wherein the notches 5 are angularly offset relative to one another. Additionally, the hole 7 defined by the body 1 has been referred to as “a hollow interior”, and the upper opening of the hole 7 has been referred to as “at least one opening in communication with the hollow interior”. As will be discussed below, even assuming arguendo that the characterization of the hole 7 and the upper opening of the hole 7 are correct, as will be discussed below, the invention recited in various pending independent claims, both previously presented and as amended, are not clearly not satisfied.

Independent claim 27 has been amended to recite, among other elements and features, that the external threads defined along the length of the elongate body are “circumferentially interrupted by a pair of oppositely disposed truncated side walls arranged substantially diametrically opposite one another to define a pair of threaded arcuate side walls”. The Applicant submits that previously presented independent claim 27 was not anticipated by the ‘550 patent. Specifically, as indicated above, even assuming arguendo that the notches 5 could be construed as “truncated side walls”, the notches 5 are not “oppositely disposed”, but are instead arranged in a triangular relationship wherein the notches 5 are angularly offset relative to one another. Nevertheless, in order to advance prosecution of the subject application, independent claim 27 has been amended to recite that the oppositely disposed truncated side walls are “arranged substantially diametrically opposite one another”. This arrangement is clearly not satisfied by the dental implant disclosed in the ‘550 patent. Additionally, as set forth in the subject application, one advantage provided by this arrangement of the truncated side walls is “that the disc space is dilated only to the extent necessary to receive the implant with the truncated side walls 22 directly facing the vertebral end plates E.” (Paragraph 62, lines 10-12).

The dental implant disclosed in the '550 patent would clearly not be capable of satisfying this advantage.

For at least the reasons set forth above, the Applicant requests withdrawal of the rejection of independent claim 27 as being anticipated by the '550 patent. As there are no additional prior art rejections of independent claim 27, allowance of independent claim 27 is respectfully requested.

Independent claim 38 recites, among other elements and features, an elongate body having a hollow interior and at least one opening in communication with the hollow interior, and further defining external threads that are circumferentially interrupted by a pair of oppositely disposed truncated side walls to define a pair of threaded arcuate side walls, with “said at least one opening extending through a corresponding one of said threaded arcuate side walls”. With regard to the '550 patent, even assuming arguendo that the hole 7 defined by the body 1 comprises “a hollow interior”, and that the upper opening of the hole 7 comprises “at least one opening in communication with the hollow interior”, the upper opening of the hole 7 does not extend through a side wall of the dental implant, as recited in independent claim 28, but instead extends through an axial end wall of the implant. Furthermore, the upper opening of the hole 7 clearly does not extend through “one of said threaded arcuate side walls”, as recited in independent claim 38. Indeed, as illustrated in Figures 1-3 of the '550 patent, there is no opening which extends through a threaded portion of the dental implant, much less through a threaded portion and into communication with a hollow interior of the dental implant.

For at least the reasons set forth above, the Applicant requests withdrawal of the rejection of independent claim 38 as being anticipated by the '550 patent. As there are no additional prior art rejections of independent claim 38, allowance of independent claim 38 is respectfully requested.

Independent claim 39 has been amended to recite, among other elements and features, that the elongate body has “a side wall extending generally along a longitudinal axis and defining a hollow interior and at least one opening extending laterally through said side wall in communication with said hollow interior”. As indicated above with regard to independent claim 38, even assuming arguendo that the hole 7 defined by the body 1 comprises “a hollow interior”,

and that the upper opening of the hole 7 comprises “at least one opening in communication with the hollow interior”, the upper opening of the hole 7 does not extend laterally through a side wall of the dental implant, as recited in independent claim 39, but instead extends axially through an end wall of the implant. Indeed, as illustrated in Figures 1-3 of the ‘550 patent, there is no opening which extends laterally through a side wall of the dental implant.

For at least the reasons set forth above, the Applicant requests withdrawal of the rejection of independent claim 39 as being anticipated by the ‘550 patent. As there are no additional prior art rejections of independent claim 39, allowance of independent claim 38 is respectfully requested.

Independent claim 40 has been amended to recite, among other elements and features, that the elongate body includes a pair of oppositely disposed arcuate side walls and a pair of truncated side walls extending between the arcuate side walls, and that the elongate body has a hollow interior and “at least one opening extending through at least one of said arcuate side walls and said truncated side walls in communication with said hollow interior”. With regard to the ‘550 patent, even assuming arguendo that the hole 7 defined by the body 1 comprises “a hollow interior”, and that the upper opening of the hole 7 comprises “at least one opening in communication with the hollow interior”, the upper opening of the hole 7 does not extend through any structure that could reasonably be construed as oppositely disposed arcuate side walls or a pair of truncated side walls, as recited in independent claim 40, but instead extends through an axial end wall of the implant.

For at least the reasons set forth above, the Applicant requests withdrawal of the rejection of independent claim 40 as being anticipated by the ‘550 patent. As there are no additional prior art rejections of independent claim 40, allowance of independent claim 40 is respectfully requested. Claims 41-43 depend from independent claim 40 and are submitted to be patentable for at least the reasons supporting the patentability of independent claim 40.

Independent claim 44 has been amended to recite, among other elements and features, an elongate body including a pair of oppositely disposed arcuate side walls adapted for engagement with the adjacent vertebrae and defining external threads, with “said elongate body having a substantially solid configuration and comprising a unitary, single-piece structure for disposition

within the disc space.” Support for this amendment is found, for example, in paragraph 48 and in Figure 8A of the subject application.

The Applicant submits that previously presented version of independent claim 44 was not anticipated by the ‘550 patent. Specifically, even assuming arguendo that the threaded portions of the implant body 1 could be construed as arcuate side walls, the threaded portions do not define “a pair of oppositely disposed arcuate side walls” that are adapted for engagement with adjacent vertebrae. Instead, like the notches 5, the threaded portions of the dental implant are arranged in a triangular relationship wherein the threaded portions are angularly offset relative to one another. Nevertheless, in order to advance prosecution of the subject application, independent claim 44 has been amended to recite that “said elongate body having a substantially solid configuration and comprising a unitary, single-piece structure for disposition within the disc space.” The dental implant does not have a substantially solid configuration. Instead, the dental implant is provided with a central hole 7 extending along a substantial portion of the implant length so as to provide the body 1 with a hollow configuration. Moreover, the dental implant does not comprise a unitary, single-piece structure for disposition within the disc space, but instead includes four individual pieces that are assembled together to form the dental implant; namely, a body 1, a bed 2 for attachment to the body 1, an implant support structure 3, and a superstructure (e.g., a tooth) which is secured to the support structure 3.

For at least the reasons set forth above, the Applicant requests withdrawal of the rejection of independent claim 44 as being anticipated by the ‘550 patent. As there are no additional prior art rejections of independent claim 44, allowance of independent claim 44 is respectfully requested. Claim 45 depends from independent claim 44 and has been amended to recite that the pair of truncated side walls are “arranged substantially diametrically opposite one another”. Dependent claim 45 is submitted to be patentable for at least the reasons supporting the patentability of independent claim 44, as well as for reasons similar to those discussed above with regard to independent claim 27. Dependent claims 46-49 have been cancelled without prejudice for possible submission in a continuing application.

Similar to independent claim 44, independent claim 50 has been amended to recite, among other elements and features, an elongate body including a pair of oppositely disposed arcuate side walls adapted for engagement with the adjacent vertebrae, with “said elongate body having a substantially solid configuration and comprising a unitary, single-piece structure for disposition within the disc space.”

As indicated above, the Applicant submits that the previously presented version of independent claim 50 was not anticipated by the ‘550 patent. Specifically, even assuming arguendo that the threaded portions of the implant body 1 could be construed as arcuate side walls, the threaded portions do not define “a pair of oppositely disposed arcuate side walls” that are adapted for engagement with adjacent vertebrae. Nevertheless, in order to advance prosecution of the subject application, independent claim 50 has been amended to recite that “said elongate body having a substantially solid configuration and comprising a unitary, single-piece structure for disposition within the disc space.” As discussed above, the dental implant is not substantially solid, but instead has a hollow configuration via the inclusion of the central hole 7 extending along a substantial portion of the implant length. As also discussed above, the dental implant does not comprise a unitary, single-piece structure for disposition within the disc space, but instead includes four individual pieces that are assembled together to form the dental implant.

For at least the reasons set forth above, the Applicant requests withdrawal of the rejection of independent claim 50 as being anticipated by the ‘550 patent. As there are no additional prior art rejections of independent claim 50, allowance of independent claim 50 is respectfully requested.

**Rejection of Claims 19-25, 30, 31 and 34-37 as Being Unpatentable**

Claims 19-25, 30, 31, and 34-37 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the ‘723 patent in view of the ‘861 patent.

The ‘723 patent is directed to a dental implant system. As an initial matter, the Applicant submits that a dental implant is not analogous art with regard to fusion devices for facilitating arthrodesis in the disc spacer between adjacent vertebrae. Additionally, the ‘723 patent

discloses an implant anchoring device including a shell 3, an internally threaded plug 8 positioned within the shell 3, an abutment 32 secured to the plug 8 via a bolt 34, and a prosthetic device (e.g., a tooth) attached to a post 30 extending from the abutment 32. The Office Action characterizes the dental implant as including an elongate body 3, external threads 5, a hollow interior (19, 20), and outer wall that are substantially continuously tapered along the length of the body.

Independent claim 19 has been amended to recite, among other elements and features, an elongate body defining external threads and including opposite outer walls that are substantially continuously tapered to define a taper angle therebetween, and with “said elongate body having a substantially solid configuration and comprising a unitary, single-piece structure for disposition within the disc space.”

The dental implant disclosed in the ‘723 patent does not have a substantially solid configuration. Instead, the shell 3 includes axial bores 19, 20 extending along a substantial portion of the implant length so as to provide the shell body 3 with a hollow configuration. Moreover, the dental implant does not comprise a unitary, single-piece structure for disposition within the disc space, but instead includes five individual pieces that are assembled together to form the dental implant; namely, a shell 3, an internally threaded plug 8 positioned within the shell 3, an abutment 32 secured to the plug 8 via a bolt 34, and a prosthetic device (e.g., a tooth) attached to a post 30 extending from the abutment 32. For at least the reasons set forth above, the Applicant requests withdrawal of the rejection of independent claim 19 as being unpatentable over the ‘723 patent in view of the ‘861 patent. As there are no additional prior art rejections of independent claim 19, allowance of independent claim 19 is respectfully requested. Claim 30 has been cancelled from the subject application for possible submission in a continuing application. Claim 20 has been amended to depend from independent claim 19. Additionally, claims 20-25 depend from independent claim 19 and are submitted to be patentable for at least the reasons supporting the patentability of independent claim 19.

Similar to independent claim 19, independent claim 31 has been amended to recite, among other elements and features, an elongate body defining external threads and including opposite outer walls that are substantially continuously tapered to define a taper angle

therebetween, and with “said elongate body having a substantially solid configuration and comprising a unitary, single-piece structure for disposition within the disc space.”

As discussed above with regard to independent claim 19, the dental implant disclosed in the ‘723 patent does not have a substantially solid configuration, but instead defines axial bores 19, 20 extending along a substantial portion of the implant length so as to provide the shell body 3 with a hollow configuration. Moreover, the dental implant does not comprise a unitary, single-piece structure for disposition within the disc space, but instead includes five individual pieces that are assembled together to form the dental implant. For at least the reasons set forth above, the Applicant requests withdrawal of the rejection of independent claim 31 as being unpatentable over the ‘723 patent in view of the ‘861 patent. As there are no additional prior art rejections of independent claim 31, allowance of independent claim 31 is respectfully requested.

Independent claim 34 has been amended to recite, among other elements and features, that the elongate body has “a side wall extending generally along a longitudinal axis and defining a hollow interior and at least one opening extending laterally through said side wall in communication with said hollow interior”. Even assuming arguendo that the axial bores 19, 20 defined in the shell 3 comprise “a hollow interior”, and that the upper opening of the axial bore 19 comprises “at least one opening in communication with the hollow interior”, neither of the axial bores 19, 20 extend laterally through a side wall of the dental implant, as recited in independent claim 34, but instead extend axially through an end wall of the implant. Indeed, as illustrated in Figures 1 and 2 of the ‘723 patent, there is no opening which extends laterally through a side wall of the dental implant in communication with a hollow interior.

For at least the reasons set forth above, the Applicant requests withdrawal of the rejection of independent claim 34 as being unpatentable over the ‘723 patent in view of the ‘861 patent. As there are no additional prior art rejections of independent claim 34, allowance of independent claim 34 is respectfully requested. Claim 37 have been amended to depend from independent claim 34. Claims 35-37 depend from independent claim 34 and are submitted to be patentable for at least the reasons supporting the patentability of independent claim 34.



**Rejection of Claims 32 and 33 as Being Anticipated and/or as Unpatentable**

Claims 32 and 33 have been rejected under 35 U.S.C. 102(b) as being anticipated by the '828 patent, or alternatively as being obvious over the '828 patent in view of the '486 patent. The Applicant has cancelled claims 32 and 33 without prejudice for possible submission in a continuing application.

**Rejection of Claims 41-43 as Being Unpatentable**

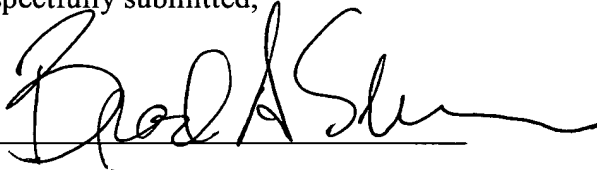
Claims 41-43 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the '550 patent in view of the '861 patent. Claims 41-43 depend from independent claim 40 and are submitted to be patentable for at least the reasons set forth above with regard to independent base claim 40.

### CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the Applicant's application is now in condition for allowance with pending claims 19-25, 27-29, 31, 34-45 and 50.

Reconsideration of the subject application is respectfully requested. Timely action towards a Notice of Allowability is hereby solicited. The Examiner is encouraged to contact the undersigned by telephone to resolve any outstanding matters concerning the subject application.

Respectfully submitted,

By: 

Brad A. Schepers  
Reg. No. 45,431  
Krieg DeVault LLP  
One Indiana Square, Suite 2800  
Indianapolis, Indiana 46204-2079  
(317) 238-6334 voice  
(317) 238-6371 facsimile